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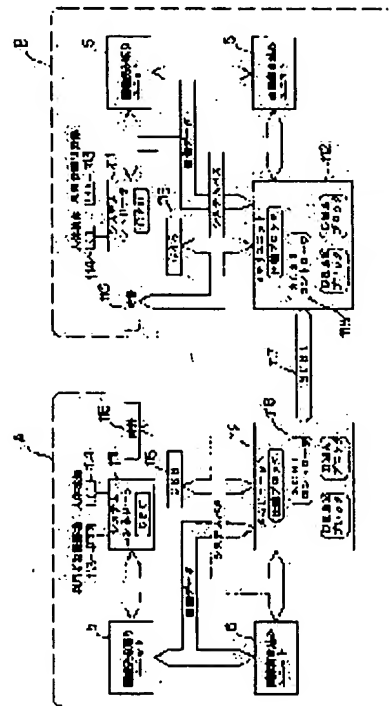
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## (54) NETWORK SYSTEM OF IMAGE FORMING DEVICE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a network system of an image forming device capable of shortening a copying time and enhancing the productivity, the use efficiency of the system.

**SOLUTION:** Plural digital copying devices A, B are connected with a network system of an image forming device through a communication means to communicate an operation command, a state, image information, etc. In the case of printing and outputting image data read by an operation machine by sharing the image data with another connected machine and, when the connected machine is under printing, the connected machine with the least number of remaining pages to be printed is selected and made to execute a printing operation by system controllers 111 of the digital copying machines. In addition, a time required for printing is calculated from the number of remaining pages to be printed and the sheet size, the connected machine with the least required time is selected and made to execute the printing operation.



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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the network system of the image formation equipment which connected two or more digital image formation equipments through the means of communications which communicates an action command, a condition, image information, etc.

[0002]

[Description of the Prior Art] Before, the system which combined two or more picture signal output means, such as an image scanner which outputs a picture signal for various purposes, and a word processor, a personal computer, and image formation means, such as two or more printers which perform image formation with each of those picture signals, respectively, is proposed. For example, two or more picture signal output units and two or more image formation equipments are organically combined by each function, such as record of image information, storage, and a communication link, and there is an image formation system which made access possible from the location of arbitration freely to other locations so that JP,2-21190,B may see. Moreover, a digital copier is connected and there is a system which raises copy actuation speed so that JP,5-304575,A may see.

[0003]

[Problem(s) to be Solved by the Invention] As mentioned above, the system which combined two or more picture signal output means, such as an image scanner which outputs a picture signal for various purposes, and a word processor, a personal computer, and image formation means, such as two or more printers which perform image formation with each of those picture signals, respectively, is already well-known. By the way, in the conventional system, when it faced other connection machines sharing the image data read by the manipulator, and carrying out a printout and a connection machine was printing, the room of amelioration was left behind in how productivity is maintained.

[0004] Then, this invention aims at offering the environment which a user is not made to do wait operation, and offering the network system of the image formation equipment which can raise compaction of copy time amount, productivity, and system use effectiveness, even if the image formation equipment which is going to carry out a printout is among movable.

[0005]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, invention according to claim 1 In the network system of the image formation equipment which connected two or more digital image formation equipments through the means of communications which communicates an action command, a condition, image information, etc. A transfer means to transmit the image data read with the reading means of image formation equipment to other equipments under connection, It has a transfer data receiving means to receive transfer data, and a command transceiver means to transmit and receive a command among two or more equipments. Furthermore, when it faces other connection machines sharing the image data read by the manipulator, and carrying out a printout and a connection machine is printing, \*\* print pagination is characterized by having chosen fewest connection machines and having the control means which carries out print actuation.

[0006] Moreover, it is characterized by invention according to claim 2 performing control a control means displays [ control ] the \*\* print pagination of a connection machine on a display in invention according to claim 1.

[0007] Moreover, invention according to claim 3 is set to the network system of the image formation equipment which connected two or more digital image formation equipments through the means of communications which communicates an action command, a condition, image information, etc. A transfer means to transmit the image data read with the reading means of image formation equipment to other equipments under connection, It has a transfer data receiving means to receive transfer data, and a command transceiver means to transmit and receive a command among two or more equipments. Furthermore, the image data read by the manipulator is faced other connection machines sharing and carrying out a printout. When a connection machine is printing, it is characterized by having deduced the print duration from \*\* print pagination and a paper size, having chosen few connection machines of a duration most, and having the control means which carries out print actuation.

[0008] Moreover, it is characterized by invention according to claim 4 performing control a control means displays [ control ] the print duration of a connection machine on a display in invention according to claim 3.

[0009]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained along with an accompanying drawing. Drawing 1 is the whole digital copier block diagram. This equipment consists of a body 1 of equipment, an automatic manuscript feed gear (ADF) 2, and a burst trimmer stacker 3. The body 1 of equipment is equipped with contact glass 4, the image reading unit 5, the image write-in unit 6, the laser output unit 7, a photo conductor 8, the development unit 9, the conveyance belt 10, the fixing unit 11, the delivery unit 12, the double-sided feeding unit 13, the 1st tray 14, the 2nd tray 15, the 3rd tray 16, the 1st feeding equipment 17, the 2nd feeding equipment 18, the 3rd feeding equipment 19, and vertical conveyance unit 20 grade.

[0010] The reading unit 5 is equipped with the exposure lamp 21, the 1st mirror 22, the 2nd mirror 23, the 3rd mirror 24, a lens 25, and CCD series 26. Moreover, the write-in unit 6 is equipped with the image formation lens 27 besides said laser output unit 7, and a mirror 28. The delivery unit 12 is equipped with the branching pawl 29. ADF2 is equipped with the manuscript base 41 and the feed belt 42 grade. The burst trimmer stacker 3 is equipped with the stapler 51, the stacker tray 52, and the staple tray 53 grade. If the start key on the control unit which mentions later the manuscript bundle which placed the image side of a manuscript by carrying out in the top is pushed on the manuscript base 41 of ADF2, the position on contact glass 4 will be fed with the feed roller 43 and the feed belt 42 from the bottom manuscript.

[0011] The manuscript which reading ended after reading the image data of the manuscript on contact glass 4 by the reading unit 5 is discharged by the feed belt 42 and the discharge roller 44. Furthermore, when it is detected that the following manuscript is in the manuscript base 41 by the manuscript set detection 45, it is fed with the manuscript on contact glass 4 like the Maebaru draft. The feed roller 43, the feed belt 42, and a discharge roller 44 are driven by the motor.

[0012] Paper is respectively fed to the transfer paper (form) loaded into the 1st tray 14, the 2nd tray 15, and the 3rd tray 16 by the 1st feeding equipment 17, the 2nd feeding equipment 18, and the 3rd feeding equipment 19, and it is conveyed to the location which contacts a photo conductor 8 by the vertical conveyance unit 20. The image data read in the reading unit 5 is written in a photo conductor 8 by the laser from the write-in unit 6, and a toner image is formed by passing the development unit 9. And while a transfer paper is conveyed with the conveyance belt 10 at rotation of a photo conductor 8 and uniform velocity, the toner image on a photo conductor 8 is imprinted. Then, an image is fixed in the fixing unit 11 and it is discharged by after-treatment equipment 3 by the delivery unit 12.

[0013] After-treatment equipment 3 can lead the transfer paper conveyed by the delivery unit 12 of a body 1 in the direction of the stacker tray 52, and the direction of the staple processing section. By changing the change plate 54 upwards, a transfer paper is delivered to the stacker paper output tray 52 side via the stacker conveyance roller 55 and the stacker delivery roller 56. Moreover, by changing the

change plate 54 downward, a transfer paper is conveyed by the staple tray 53 via the conveyance rollers 57 and 58.

[0014] Whenever paper is delivered to one sheet, a paper end side is arranged by the jogger 59 for \*\*\*\*\*, and the transfer paper loaded into the staple tray 53 is filed by the stapler 51 with a part of completion of a copy. The transfer paper group filed with the stapler 51 is contained by self-weight at the staple completion paper output tray (fall tray) 60.

[0015] On the other hand, the stacker tray 52 which is the usual paper output tray is a paper output tray movable forward and backward. the stacker tray 52 movable forward and backward is \*\*\*\*\* about the copy paper which moves forward and backward and is discharged in simple by every manuscript and the image memory for every copy section by which sorting was carried out.

[0016] It is setting the branching pawl 29 for a path change to the bottom, and once stocks to the double-sided feeding unit 13 without feeding paper from each medium trays 14-16 and leading the formed transfer paper to the stacker tray 52 side, when forming an image to both sides of a transfer paper.

[0017] Then, in order to imprint the toner image again formed by the photo conductor 8, paper is re-fed to the transfer paper stocked by the double-sided feeding unit 13 from the double-sided feeding unit 13, it sets the branching pawl 29 for a path change to the bottom, and leads it to the stacker tray 52. Thus, when creating an image in both sides of a transfer paper, the double-sided feeding unit 13 is used.

[0018] A photo conductor 8, the development unit 9, the conveyance belt 10, the fixing unit 11, the delivery unit 12, each feed equipments 17-19, and the vertical conveyance unit 20 are driven by the Maine motor.

[0019] Drawing 2 is the layout pattern of a control unit. There are the liquid crystal touch panel 71, a ten key 72, the clearance/stop key 73, the print key 74, the mode clear key 75, and an initialization key 76 in a control unit 70, and various kinds of function keys (a staple, a stack, a sort, variable power, etc.), number of copies, the message that shows the condition of image formation equipment are displayed on the liquid crystal touch panel 71. ✕

[0020] Drawing 3 thru/or drawing 6 are drawings showing the 1st of the liquid crystal touch panel of a control unit thru/or the 4th example of a display. The key an operator indicates the selected function to ✕ be by touching the key displayed on the liquid crystal touch panel 71 is reversed black. Moreover, when the detail of a function must be specified (for example, if it is variable power variable power value etc.), the setting screen of a detail function is displayed by touching a key. Thus, since the dot drop is being used for the liquid crystal touch panel 71, it can perform the optimal display at that time graphically.

[0021] In drawing 3, the 1st message area 71a as which the upper left displays the message of "it can copy", "waiting", etc., and its right In copy number-of-sheets display 71b which displays the set number of sheets, and the bottom of it Automatic concentration key 71c which adjusts image concentration automatically, automatic form selection key 71d which chooses a transfer paper automatically, Sort key 71e which specifies the processing which arranges the 1 section of copies at a time in order of a page, Stack key 71f which specifies the processing which classifies a copy for every page, Staple key 71g which specifies the processing which files at a time the 1 section of things by which sorting application was carried out, Double key 71h, such as setting a scale factor to actual size, variable power key 71i which sets expansion/contraction scale factor, There are elimination / navigation key 71k which sets up double-sided key 71j which sets up double-sided mode, binding margin mode, etc., and coupled-modes key 71l. which divides a lot of print actuation into plurality, and prints it out through the network of a digital copier. As for the mode chosen, a half-tone-dot-meshing indication of the key is given.

[0022] Moreover, drawing 4 is a screen which sets up using which copying machine it realizes at the time of coupled modes. It chooses by carrying out the depression of the key of each copying machine. If a setup is completed and the depression of the 71m of the setting end keys will be carried out, it will become the screen of drawing 5 and coupled modes will be set up. This mode will be canceled if the depression of the coupled-modes key 71l. is carried out, and it serves as a display of drawing 3 by the re-depression.

[0023] Drawing 6 is an example of a display when stopping, before becoming a toner end by the break of the section by a toner near end etc. A toner near end is shown in message area 71a. Actuation until it

carries out latent-image formation of return, the image reading means in this invention, and the image on a recording surface is again explained to drawing 1. A latent image is potential distribution which produces an image by changing and irradiating optical information on a photo conductor side.

[0024] The reading unit 5 consists of the contact glass 4 and the optical scan systems which lay a manuscript, and the optical scan system consists of the exposure lamp 21, the 1st mirror 22, a lens 25, and CCD series 26 grade. The exposure lamp 21 and the 1st mirror 22 are fixed on the 1st carriage which is not illustrated, and the 2nd mirror 23 and the 3rd mirror 24 are fixed on the 2nd carriage which is not illustrated.

[0025] When reading a manuscript image, the 1st carriage and the 2nd carriage are mechanically scanned with the relative velocity of 2 to 1 so that the optical path length may not change. This optical scan system is driven with the scanner drive motor which is not illustrated. A manuscript image is read by CCD series 26, is changed into an electrical signal and processed. An image scale factor changes by moving a lens 25 and CCD series 26 to a longitudinal direction in drawing 1. That is, corresponding to the specified scale factor, a location is set as the longitudinal direction of a lens 25 and CCD series 26.

[0026] As mentioned above, the write-in unit 6 consists of a laser output unit 7, an image formation lens 27, and a mirror 28, and is equipped with the rotating polygon (polygon mirror) which carries out constant-speed rotation by the laser diode and motor which are a laser light source at high speed in the interior of the laser output unit 7.

[0027] The laser beam irradiated from the laser output unit 7 polarizes by the polygon mirror which carries out constant-speed rotation, passes along the image formation lens 27, is turned up by the mirror 28, and carries out condensing image formation on a photo conductor side. An exposure scan is carried out in the direction which a photo conductor 8 rotates, and the direction (main scanning direction) which intersects perpendicularly, and the laser beam which polarized records the Rhine unit of the picture signal outputted from the selector of the image-processing section mentioned later. By repeating horizontal scanning with the predetermined period corresponding to the rotational speed and recording density of a photo conductor 8, an image (electrostatic latent image) is formed on a photo conductor side.

[0028] As mentioned above, the laser beam outputted from the write-in unit 6 is irradiated by the photo conductor 8 of an image imaging system. Although not illustrated, the beam sensor which generates a horizontal-scanning synchronizing signal in the location which can irradiate the laser beam near the end of a photo conductor 8 is arranged. The control signal for outputting and inputting the picture signal which the image recording initiation timing of a main scanning direction controls and mentions later based on this horizontal-scanning synchronizing signal is generated.

[0029] Drawing 7 is the block diagram showing an example of an image processing system (image reading section and image write-in section). the light irradiated from the exposure lamp 21 -- a manuscript side -- irradiating -- the reflected light from a manuscript side -- CCD series 26 -- an image formation lens -- image formation -- photo electric conversion is received light and carried out, and it changes into a digital signal by A/D converter 81. After a shading compensation is made in the shading compensation section 82, as for the picture signal changed into the digital signal, MTF amendment, gamma amendment, etc. are made in the image-processing section 83.

[0030] In a selector 84, the change which changes the destination of a picture signal to the variable power section 85 or the image memory controller 86 is performed. According to the rate of variable power, enlarging or contracting of the picture signal which went via the variable power section 85 is carried out, and it is sent to the write-in unit 6. It has composition which can output and input a picture signal bidirectionally between the image memory controller 86 and the selector 84.

[0031] Although not clearly shown especially in drawing 7, it has the function which chooses I/O of two or more data so that an image processing system can also process the image data (for example, data outputted from data processors, such as a personal computer) supplied from the outside besides the image data inputted from the reading unit 5 (the printing unit 93, printing composition sections 94 and 95). It has ROM88 and RAM89 which store CPU87 which performs setup in image memory controller 86 grade, and control of the image reading unit 5 and the write-in unit 6, and its program and data.

Furthermore, CPU87 performs writing of the data of an image memory 90, and read-out through the memory controller 86. A sign 91 shows an I/O Port and 92 shows a SCSI driver.

[0032] Drawing 8 is the internal-block Fig. of a memory controller and an image memory. Moreover, drawing 9 is drawing showing the picture signal for 1 page in a selector. In drawing 9, the frame gate signal expresses the shelf-life of the direction of vertical scanning of 1-page image data. A horizontal-scanning synchronizing signal is a signal in every line, and becomes effective [ a picture signal ] with the predetermined clock after this signal starts. The signal which shows that the picture signal of a main scanning direction is effective is a line gate signal.

[0033] These signals synchronize with the pixel clock VCLK, and 1-pixel data are sent to one period of VCLK. The image processing system has a separate frame gate signal, a horizontal-scanning synchronizing signal, a line gate signal, and the developmental mechanics of VCLK to an image input and each output, and the combination of various image I/O becomes realizable.

[0034] As shown in drawing 8, the memory controller 86 has the block of the input data selector 101, 102 or primary image composition section compression / expanding section 103, and 104 or secondary output data selector compression / expanding section 105. A setup of the control data to each block is performed from CPU87. The address in drawing 7 and data show image data, and the data connected to CPU87 and the address are not illustrated.

[0035] An image memory 90 consists of the primary secondary storage 106,107. Primary storage 106 uses the memory in which rapid access, such as DRAM, is possible so that an abbreviation synchronization may be carried out and the writing of the data to memory 90 or read-out of the data from the memory 90 at the time of an image output can carry out to an input image data transfer rate at a high speed.

[0036] Moreover, the magnitude of the image data which processes divided primary storage 106 into two or more area, and it has taken the configuration (interface section with a memory controller) which can be performed to coincidence for I/O of image data. In order to enable activation of an image entry of data and an output to juxtaposition respectively in the divided each area, it connects with the interface with a memory controller with 2 sets of address data lines, the object for a lead, and the object for lights. Thereby, while inputting an image into area 1 (light), actuation of outputting an image from area 2 (lead) is attained.

[0037] Secondary storage 107 is mass memory which saves data, in order to perform composition of the inputted image, and sorting. If the component in which the rapid access of the primary secondary storage 106,107 is possible is used, it has the primary composition [ secondary ] of using a cheap mass record medium although data can be processed fair, it becomes comparatively easy [ control ] and an access rate is not so quick to secondary storage since components, such as DRAM, are expensive, and performing processing of a I / O data through a primary storage. By adopting the configuration of the above image memory 90, it becomes possible to realize the image formation equipment which can process I/O of a lot of image data, preservation, processing, etc. with a cheapness and comparatively easy configuration.

[0038] Next, the outline of actuation of the memory controller 86 is explained. First, an image input (preservation to an image memory 90) is explained. The input data selector 101 chooses the image data which performs the writing to the primary storage [ from ] 106 of an image memory among two or more data. The image data chosen by the input data selector 101 is supplied to the image composition section 102, and performs composition with the data already saved in the image memory 90. The image data processed by the image composition section 102 is compressed by primary compression / expanding section 103, and writes the data after compression in primary storage 106. After the data written in primary storage 106 compress further in secondary compression / expanding section.105 if needed, they are saved at secondary storage 107.

[0039] Next, an image output (read-out from an image memory 90) is explained. At the time of an image output, the image data memorized by primary storage 106 is read. When the image used as the candidate for an output is stored in primary storage 106, the image data of primary storage 106 is elongated in primary compression / expanding section 103, and the data after expanding or data after performing



image composition with the data after expanding and input data is chosen and outputted by the output data selector 104.

[0040] The image composition section 102 processes selection (the dual output to the output destination change of both write back to an image output and primary storage 106 is also possible) of the output destination change of the data after composition (it has the phase-adjustment function of image data) with the data of primary storage 106, and input data, and composition etc. When the image used as the candidate for an output is not stored in primary storage 106, after elongating in secondary compression / expanding section 105 and writing the data after expanding in primary storage 106 to the image data for an output stored in secondary storage 107, above-mentioned image output actuation is performed hereafter.

[0041] Moreover, although it is necessary to perform transmission and reception of other digital copiers and commands, or image data in order to carry out an activity assignment, this is realized with this operation gestalt using a SCSI interface. The memory controller 86 of drawing 7 has realized it through the SCSI driver 92.

[0042] The block diagram in which drawing 10 shows the 1st example of a hard configuration of a digital copier, and drawing 11 are the block diagrams showing the 2nd example of a hard configuration similarly. In this invention, although the system is constituted from the image reading unit 5, the image write-in unit 6, a system controller 111, the memory unit 112, the user limit device 113, a body detection sensor 114, remote diagnostic equipment (CSS) 115, and a clock 116, the memory unit 112 is required only when realizing a memory function, and only considering realizing the usual copy function, it is not necessary. Furthermore, if it becomes a certain specific time amount, the clock 116 is required, only when booting a machine or realizing a weekly timer function [ shut / function ].

[0043] Moreover, the body detection sensor 114 is required only when the user has approached in front of a machine at the time of remaining-heat mode, and realizing the function to cancel remaining-heat mode automatically.

[0044] CSS115 is automatically notified to a service center, when the error of the telediagnosis, i.e., a machine, occurs, or since it is the function which acts as the monitor of the running state/the busy condition of a machine from a remote place, it should be equipped with it only when such a function is required.

[0045] The DRAM block of the memory unit 112 in drawing 10 and drawing 11 is for memorizing the picture signal read in the image reading unit 5, and can transmit the image data saved to the image write-in unit 6 according to the demand from a system controller 111. Moreover, the compressed block is equipped with compression functions, such as MH, MR, and a MMR method, can once compress the read image, and can aim at improvement in the utilization ratio of memory (DRAM). Moreover, rotation of an image is realized by changing the address read from the image write-in unit 6, and its direction. In the example of a hard configuration of drawing 10, control of the image reading unit 5, the image write-in unit 6, the memory unit 112, and CSS115 is controlling only by 1CPU of a system controller 111.

[0046] On the other hand, CPU is given to the image reading unit 5, the image write-in unit 6, and the memory unit 112, respectively, and a system hard configuration can consist of examples of a hard configuration of drawing 11 freely as the command from a system controller 111 to each controller is transmitted by the control signal line. A user limit means specifying, limiting and managing a user and has user limit devices, recitation codes, etc., such as a coin rack, a key counter, a keycard, and a PURIPEDO card, as a means for it here to permit use without any restriction.

[0047] Moreover, a weekly timer function is a function which doubles with the ON and OFF time amount which were set up for every day of the week, turns on a power source and is turned off. The actuation for carrying out time-of-day doubling of the clock module for this function and actuation of setting up ON and OFF time amount for every day of the week are required.

[0048] Moreover, remaining-heat mode is the mode in which power consumption is saved, by constant-temperature(for example, 10 degrees C)-lowering fixing temperature, controlling it, and erasing a control unit display. A setup in this mode is performed by the key input by the control unit, and also after actuation and actuation are lost depending on a machine setup, it is automatically set up after fixed



time amount. This mode is canceled when the key input by the control unit and a machine setup detect that people stood in front of the machine by the body detection sensor.

[0049] Drawing 12 is the conceptual diagram of the network system of a digital copier. Although eight digital copier A-H is connected by the network interface in this example, it cannot be overemphasized that the number of digital copiers is not what is limited to this.

[0050] Drawing 13 is the block diagram showing the example of a hard configuration of two connected digital copiers. For example, digital copiers A and B have hard composition shown in drawing 10, respectively, and into the memory unit 112, since the image data from a transfer or a network is saved for the read image on an external network at the DRAM block section in the memory unit 112, SCSI117 and the SCSI controller 118 are used as a network means. For a network communication means, various means, such as using the TCP/IP communication link of an OSI (Open System Interface) reference model for data communication, can be considered, using Ethernet as a physical means with a natural thing.

[0051] Moreover, the notice of a condition inside the plane of each machine which exists on a network, and the transfer of control command like the remote output command mentioned later and a setting command are also performed not to mention the image data transfer as mentioned above by using a configuration as shown in this drawing.

[0052] Next, the actuation (the following, remote output) transmitted to the image write-in unit 6 of a hard configuration of that the image read with the hard configuration shown in drawing 10 is shown in drawing 11 is explained.

[0053] Drawing 14 is the conceptual diagram of the software of two connected digital copiers. the copy shown all over drawing -- the application which performs a copy sequence for an application 121 to perform copy actuation -- Input/output control 122 is Rhea (device driver) who does logic / physical conversion of the data. Rhea (LED lighting / putting out lights a LCD display --) to whom the control unit controller 123 performs MMI (Man Machine Interface) He is Rhea who performs a key input scan etc. with logical level. The circumference machine controller 124 He is Rhea who performs control of the circumference machine with which copying machines, such as an automatic double-sided unit, a sorter, and ADF, are equipped with logical level. The image formation equipment controller 125 and the image reader controller 126 are controllers of the image write-in unit 6 and the image reading unit 5, respectively.

[0054] The memory unit 118 is as aforementioned. Moreover, the daemon process 127 exists in image data read-out saved in the memory unit 118, and image formation equipment as application which performs the duty which transmits image data, when a print request is requested from other machines on a network. Before a daemon process's 127 reading an image from the memory unit 118 with a natural thing and performing print actuation, the image transfer from other machines on a network must be ended and placed.

[0055] Here, a control unit, a circumference machine, image formation equipment, an image reader, and a memory unit are treated as a resource (resource) which each copying machine holds. A resource means the functional unit unit shared from two or more applications. The system controller 111 is performing system control in this resource unit. When digital copier A of this drawing performs copy actuation using each own resource (at the time of a print start key depression), each resource of a circumference machine and a memory unit is required of the system control section from a system controller 111 image formation equipment, an image reader, or if needed.

[0056] the system control section -- a copy -- the demand from an application 121 -- receiving -- mediation of the royalty of a resource -- carrying out -- a copy -- the mediation result (use propriety) is notified to an application 121. the resource which a system holds in the case (condition by which network connection is not carried out) where digital copier A is used by the stand-alone -- all -- a copy -- since an application 121 is in the condition which can be occupied, copy actuation is performed immediately.

[0057] On the other hand, the royalty of a resource is required like this invention from the system controller 111 of the remote digital copier which performs print actuation using the resource of another

machine (henceforth, remote digital copier) which exists on a network. The system controller 111 of a remote digital copier arbitrates a resource according to a demand, and notifies the result to the application of the machine of a requiring agency. Application performs an image transfer to the memory unit 118 of the machine of a RIMODO output destination change through an external interface (this operation gestalt SCSI117), after performing reading of an image and completing image storage into the own memory unit 118, when a royalty is permitted.

[0058] After an image transfer is completed and transmitting the monograph affairs (feed opening, delivery opening, print number of sheets, etc.) for carrying out print activation to the daemon process 127 of the machine of the remote output point, a print initiation command is transmitted. If the daemon process 127 of the remote output point receives a print initiation command, print initiation will be required from the own (machine which performs a remote output) system controller 111, and a remote output will be performed by the system controller 111. When the memory unit 118 of digital copier B is used by digital copier A, in the memory unit 118 of digital copier B, use of the application of digital copier B (digital copiers other than digital copier A when [ or ] two or more digital copiers as shown in drawing 12 are connected on a network) is improper.

[0059] Drawing 15 is the explanatory view showing an example of the outline in the electronic sort mode at the time of connection actuation (function which collects and sorts an image in memory) of operation. The 6 sections of three manuscripts are copied by one more set of a manipulator and a machine, and the case where sort actuation is carried out is shown. Among one set of a manipulator (master machine) and a slave machine, copy actuation is shared and it is operating. A manipulator side usually operates manuscript reading actuation and print actuation to coincidence. Actual actuation is performing in parallel actuation which writes the image in memory 118, printing a scanner image as it is. After 1 section print actuation termination, an image is read, eye the two sections is printed from memory 118, and print actuation of eye the three sections is performed after the termination.

[0060] A slave machine side makes memory 118 memorize the image sent from a manipulator. Whether that image can be printed in parallel takes for the engine performance of the memory unit 118 at this time. Here, print actuation is performed after memory storage actuation termination. It is processed with eye the two sections and eye the 3 sections after print termination of eye the one section. Moreover, the number of specification parts is printed by one half as shown here, but also when this assignment can be set up freely and one of machines are interrupted, it is also easily possible to change assignment number of copies of a section unit. The number of the remainders under interruption can be assigned.

[0061] Drawing 16 is the explanatory view showing other examples of the outline in the electronic sort mode at the time of connection actuation (function which collects and sorts an image in memory) of operation. Drawing 16 shows the example of operation which was made not to perform print actuation to coincidence at the time of manuscript reading actuation. When it is detected that there are few residues of a supply, this example operates only reading actuation so that it may not become a supply end in the middle of the section.

[0062] Drawing 17 is the block diagram of the managerial system of a digital copier. The management equipment 131 currently installed in the service base and digital copier A-E currently installed in a user's origin are connected through the public line network 132. The communication link control apparatus 133 for controlling the communication link with management equipment 131 is installed in the user side, and the digital copier of user origin is connected to this communication link control apparatus 133. Installation is possible in the form which the communication link control apparatus 133 is connectable [ telephone 134 or facsimile 135 ], and inserts it in a user's existing circuit.

[0063] Although two or more digital copiers are connectable at the communication link control apparatus 133, of course, there may be an unit. A model which does not need to be the thing of isomorphism and is different is also available for these digital copiers, and any devices other than a digital copier are also available for them. Here, it carries out [ that a maximum of five digital copiers are connectable and ] to one set of the communication link control apparatus 133 after [ expedient ] explaining. Multidrop connection of the communication link control apparatus 133 and two or more digital copiers is made by RS-485 specification.

[0064] Communications control between the communication link control apparatus 133 and each digital copier is performed by the basic mode data transmission control procedure. By establishing a data link with the polling/selecting of the Sentra RAIZUDO control which made the communication link control apparatus 133 the control station, the communication link with the digital copier of arbitration is attained. Each digital copier can set up the value of a proper now with an address selection switch, and the polling address of each digital copier and the selecting address are determined by this.

[0065] Next, the operation gestalt corresponding to invention given in a claim is explained based on drawing 18 thru/or drawing 30.

[0066] Drawing 18 is the flow chart of the processing of operation which shows the gestalt (it corresponds to invention according to claim 1) of the 1st operation. Moreover, drawing 21 thru/or drawing 30 are drawings showing the 5th of the liquid crystal touch panel of a control unit thru/or the 14th example of a display. A setup (they are nine sheets as shown in drawing 21) of total number of copies (number of sheets) first printed to a manipulator is performed (S1). If many print setup and a setup of a connection mode of operation are performed on the control unit screen represented by drawing 21 and it is set as coupled modes (it is Y at S2), the screen (the 2nd message area 71m; drawing 22) which asks whether it outputs to other connection machines will be taken out to a control unit 70 (S4).

[0067] Here, even if it has case and set up, in [ which is not made into a connection mode of operation ] not carrying out the output to other connection machines, total number of copies (number of sheets) set up only by the manipulator is printed, and it ends processing (S3).

[0068] In going into coupled modes and outputting to many opportunities, according to "an automatic assignment actuation setup" which the user set up beforehand, it changes the print allocation to a connection machine in the setting mode represented on the screen of drawing 23.

[0069] The 1st operation gestalt is the case where the above "an automatic assignment actuation setup" is set up (it is Y at S5), and output number of copies (number of sheets) to a manipulator and a connection machine is set up on the setting screen represented by drawing 24 (S6). It is made for the sum of setting number of copies (number of sheets) of a manipulator and a connection machine to ~~become the same~~ to total number of copies (number of sheets) set up first at this time. Then, the print number of sheets of each connection machine is asked (S7).

[0070] At a connection machine side, if it is "under print" to an inquiry, "the remaining print pagination" will be transmitted, based on these information, if a print is assigned to which connection machine, it will judge [ conditions, such as "it being waiting" etc. ""during manuscript reading and a print"" and ] whether it is the earliest, and the output directions for setting number of copies (number of sheets) will be taken out with a manipulator side (S8). Moreover, when the copy of an assignment ends a manipulator and a connection machine, an output destination change and number of copies (number of sheets) are displayed on the control unit 70 of a manipulator, as shown in drawing 25 (S9).

[0071] By invention according to claim 2, output number of copies (number of sheets) to a manipulator and a connection machine is set up in the flow of the gestalt of the 1st operation. Then, the print duration of each connection machine is asked. Like the gestalt of the 1st operation, by the connection machine side, if it is "under print" to an inquiry, "the remaining print duration" will be computed and it will transmit from conditions, such as "it being waiting" etc. ""during manuscript reading and a print"", "the total print pagination" and the "transfer paper size" which were read with the manuscript automatic feeder (ADF) 2, and "print speed (CPM)" of a copying machine.

[0072] Based on these information, if a print is assigned to which connection machine, it will judge whether it is the earliest and the output directions for setting number of copies (number of sheets) will be taken out with a manipulator side. Moreover, when the copy of an assignment ends a manipulator and a connection machine, an output destination change and number of copies (number of sheets) are displayed on the control unit 70 of a manipulator as shown in drawing 25.

[0073] Drawing 19 is the flow chart of the processing of operation which shows the gestalt (it corresponds to invention according to claim 3) of the 2nd operation. Step S11 of the gestalt of the 2nd operation thru/or processing of S19 are the same as the gestalt of the 1st operation except [ which is

shown in drawing 19 to having remained in other opportunities at step S7, and having asked / which is shown in drawing 18 / PERINTO pagination with the gestalt of the 1st operation ] remaining in other opportunities at step S17, and asking a print duration with the gestalt of the 2nd operation.

[0074] Here, as it is in claim 2 and invention according to claim 4, and the information on the "remaining print pagination" obtained from each connection machine and the "remaining print duration" is shown in 2nd message area 71m of the liquid crystal touch panel 71 of the control unit 70 of a manipulator during a print at drawing 26 and drawing 27 , it displays. By doing in this way, a user can do effective usage, when it can \*\* if the print waiting state of each connection machine is grasped on real time, and raising the availability of a system.

[0075] Drawing 20 is the flow chart of the processing of operation which shows the gestalt of the 3rd operation. This flow chart is a thing when not setting up the above "an automatic assignment actuation setup." That is, in the case of N, it shifts to S21 of drawing 20 in S5 of drawing 18 S15 of the case of N, and drawing 19 .

[0076] The connection machine (remote opportunity) and output number of copies (number of sheets) which a user wants to output are set as arbitration on the setting screen represented by drawing 28 and drawing 29 (S21-S23). It is made for the sum of setting number of copies (number of sheets) of a manipulator and a connection machine to become the same to total number of copies (number of sheets) set up first at this time. Then, the operating status of the connection machine containing a manipulator which carried out an output setup is seen in the sequence that a number is young (S24, S27, S30), and the output directions for setting number of copies (number of sheets) are taken out to the connection machine which can work (S26, S29, S32).

[0077] When the copy of an assignment ends a manipulator and a connection machine to the connection machine in the condition that it cannot copy with SC, a jam, etc., the condition is displayed on the control unit of a manipulator, as shown in drawing 30 (S25, S28, S31).

[0078]

[Effect of the Invention] Since according to invention according to claim 1 it is parallel to a manipulator among two or more image formation equipments (connection machine) and copy actuation can be performed, compaction of time amount can be aimed at and productivity can be raised. Moreover, since the remaining print pagination makes automatic selection of the fewest image formation equipment and is printed even when other image formation equipments under connection are printing, a user can leave the spot, without carrying out waiting for a print, and can gather the effectiveness as a system.

[0079] Since a user can recognize the latency time by displaying the remaining print pagination on a control unit in operational image formation equipment on a trusted system according to invention according to claim 2, the time amount of the waiting for a print can be used effectively, and the effectiveness as a system can be gathered.

[0080] According to invention according to claim 3, the same effectiveness as invention according to claim 1 is done so.

[0081] According to invention according to claim 4, the same effectiveness as invention according to claim 2 is done so by displaying the remaining print duration on a control unit.

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[Translation done.]

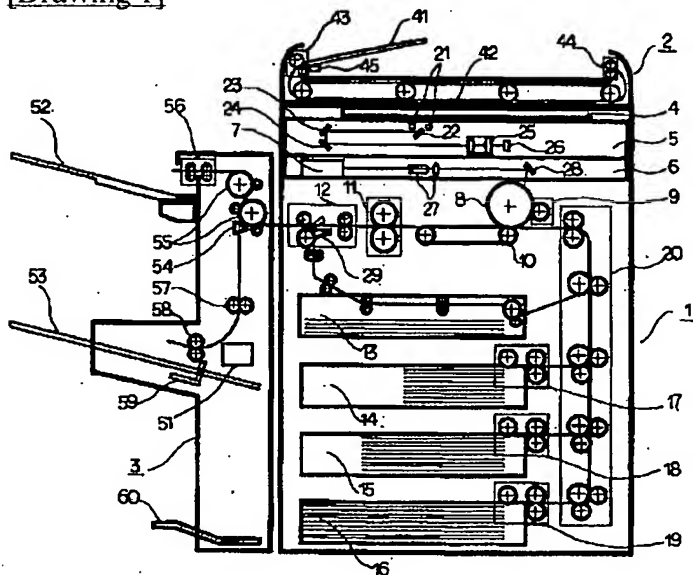
## \* NOTICES \*

JPO and INPIT are not responsible for any damages caused by the use of this translation.

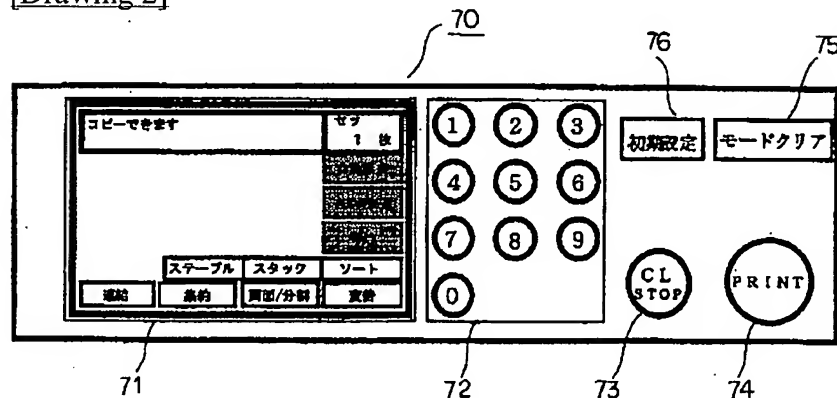
- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

## DRAWINGS

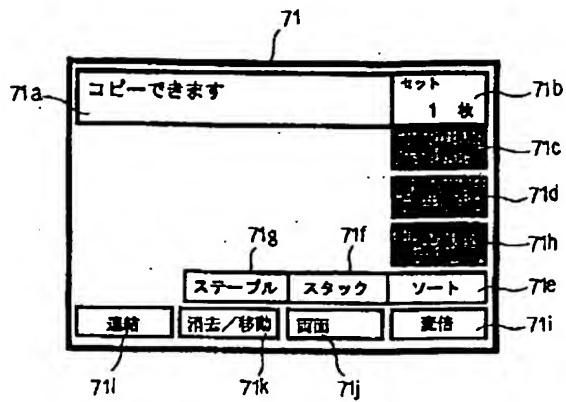
[Drawing 1]



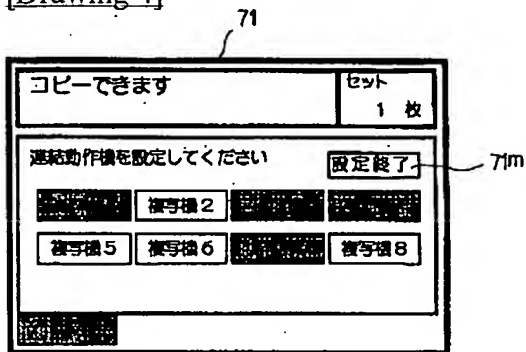
[Drawing 2]



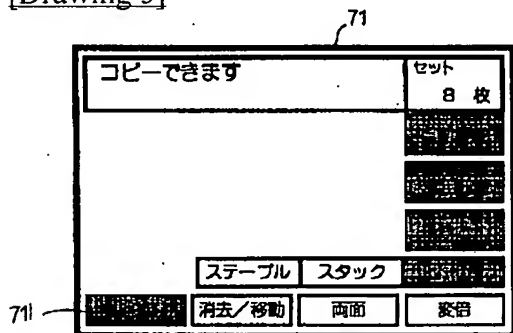
[Drawing 3]



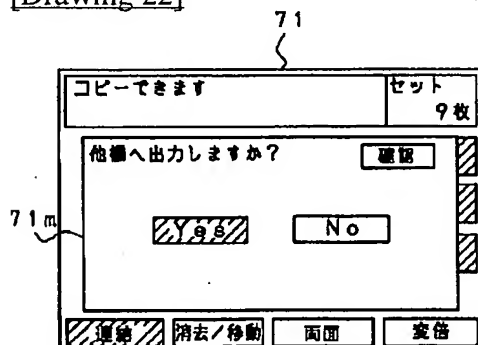
[Drawing 4]



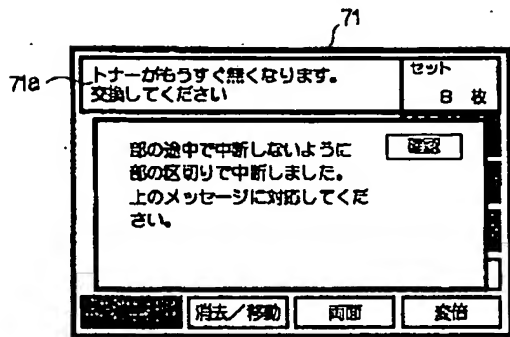
[Drawing 5]



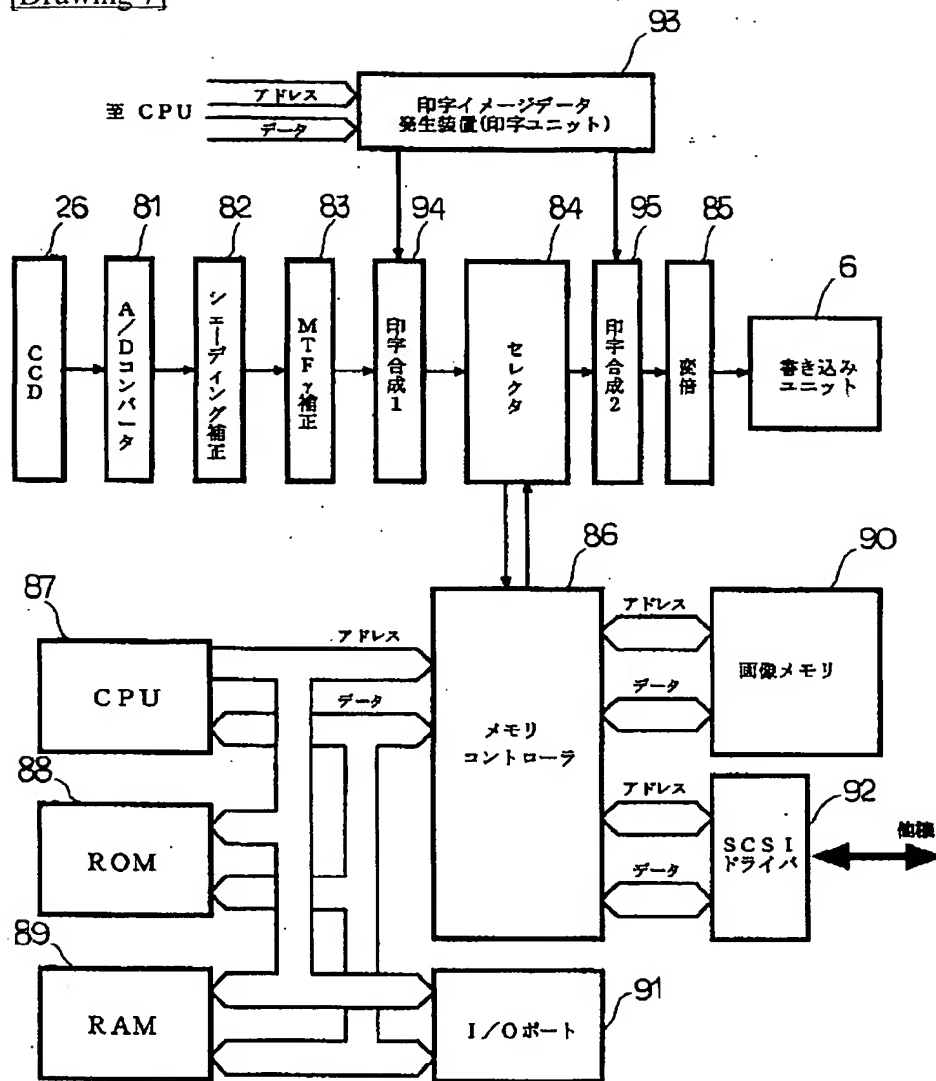
[Drawing 22]



[Drawing 6]

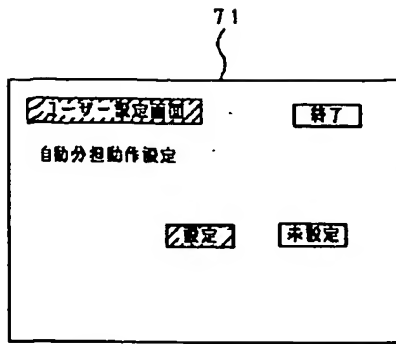


[Drawing 7]

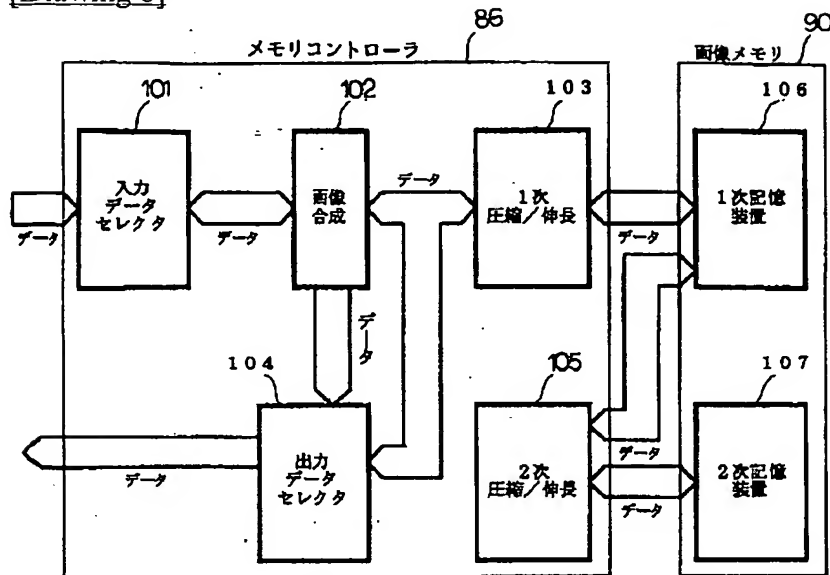


[Drawing 23]

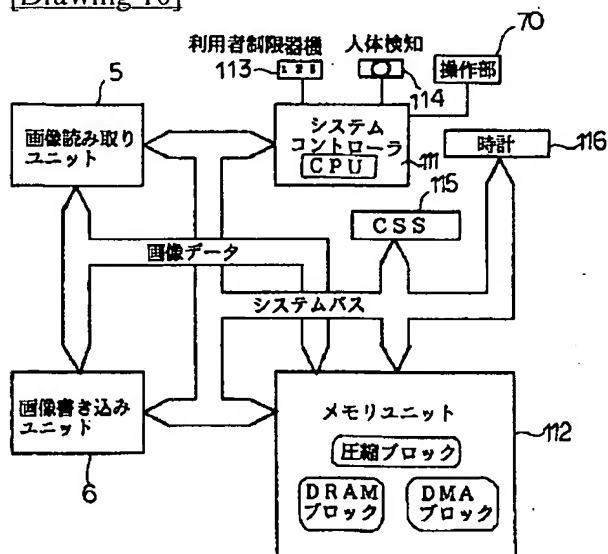




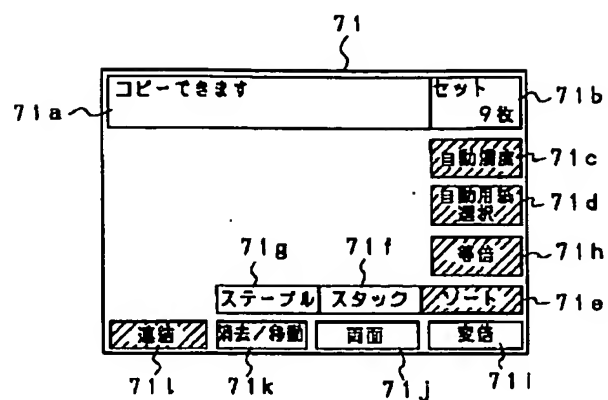
[Drawing 8]



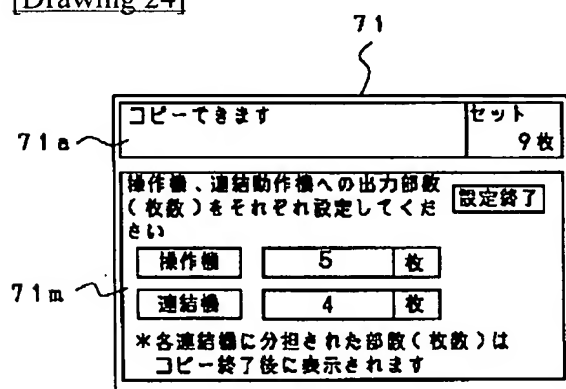
[Drawing 10]



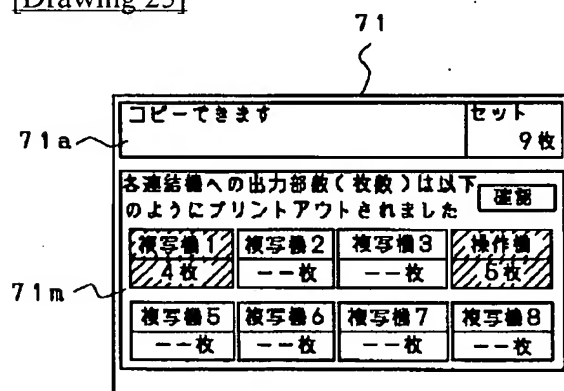
[Drawing 21]



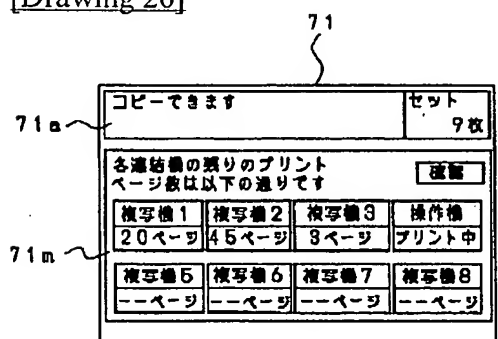
[Drawing 24]



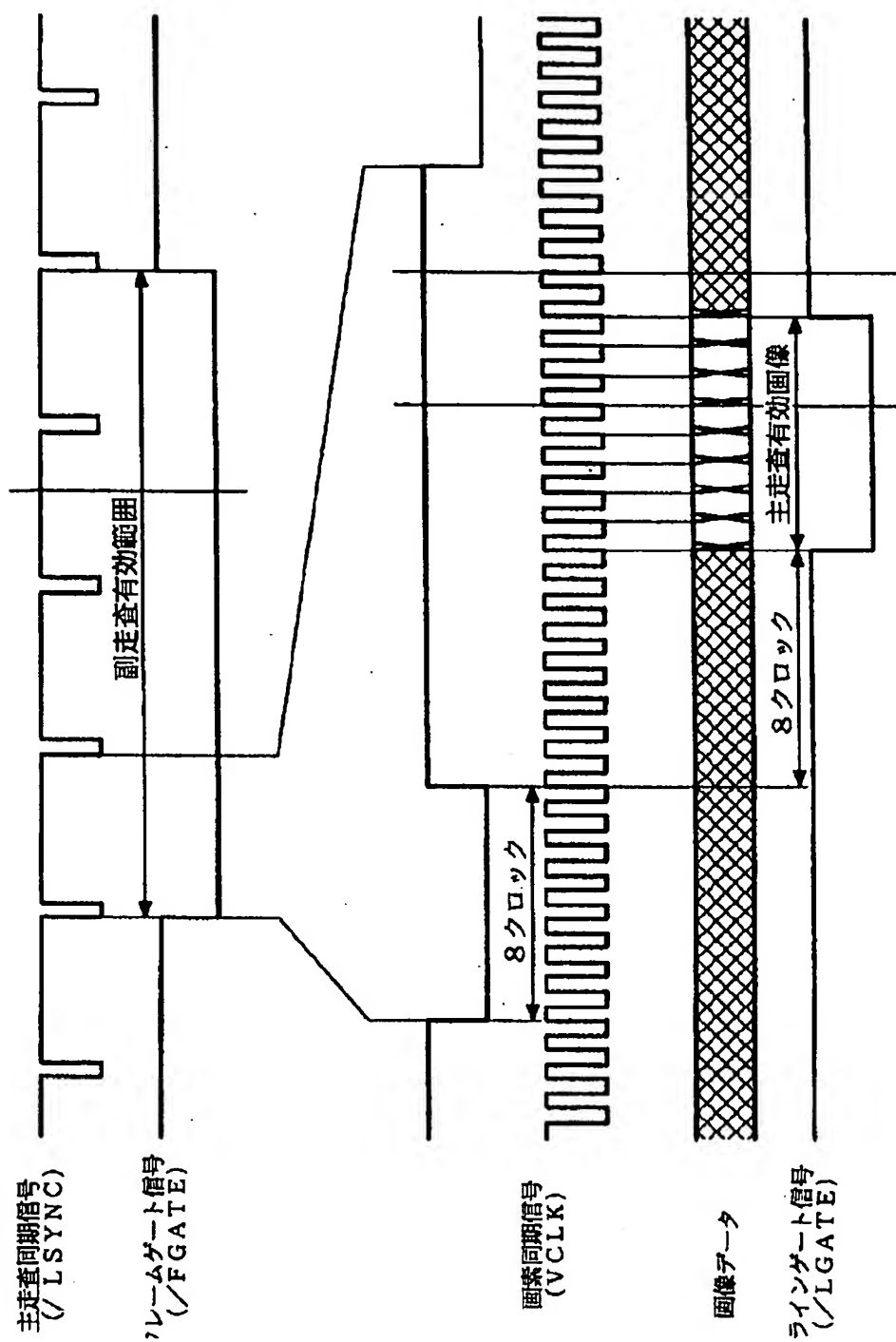
[Drawing 25]



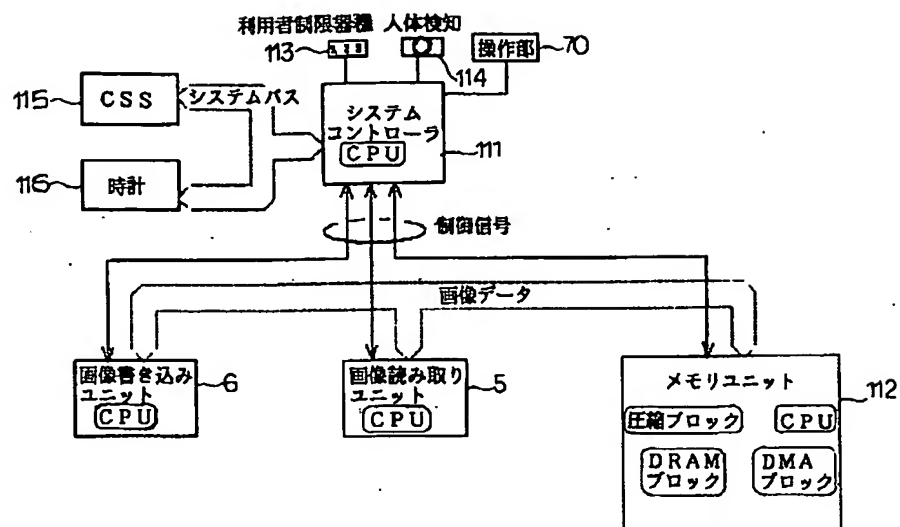
[Drawing 26]



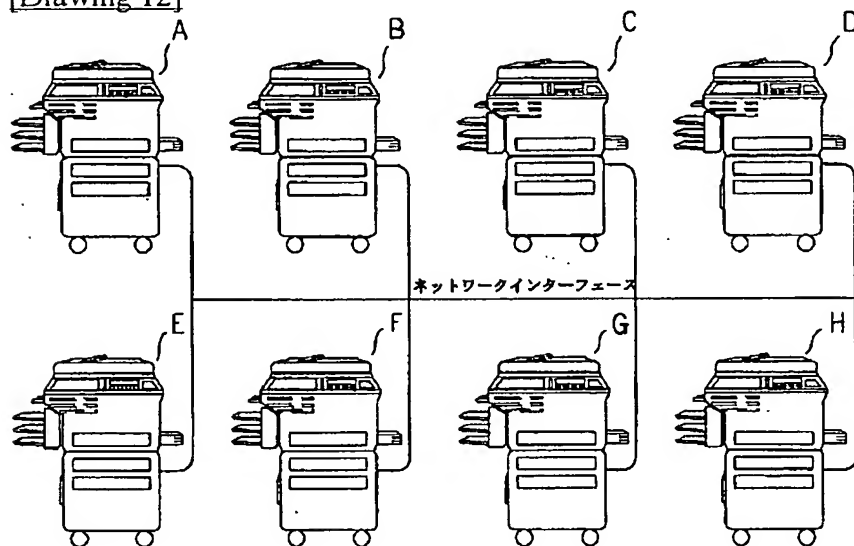
[Drawing 9]



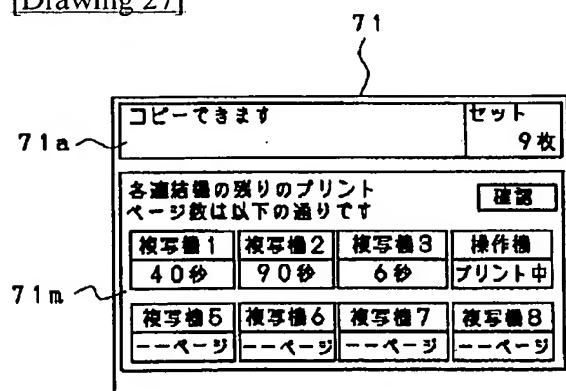
[Drawing 11]



[Drawing 12]



[Drawing 27]



[Drawing 28]

71

コピーできます	セット 9枚
連結動作欄を設定してください <input type="button" value="設定終了"/>	
複写機1	複写機2
複写機3	操作機
複写機5	複写機6
複写機7	複写機8

71a

71m

[Drawing 29]

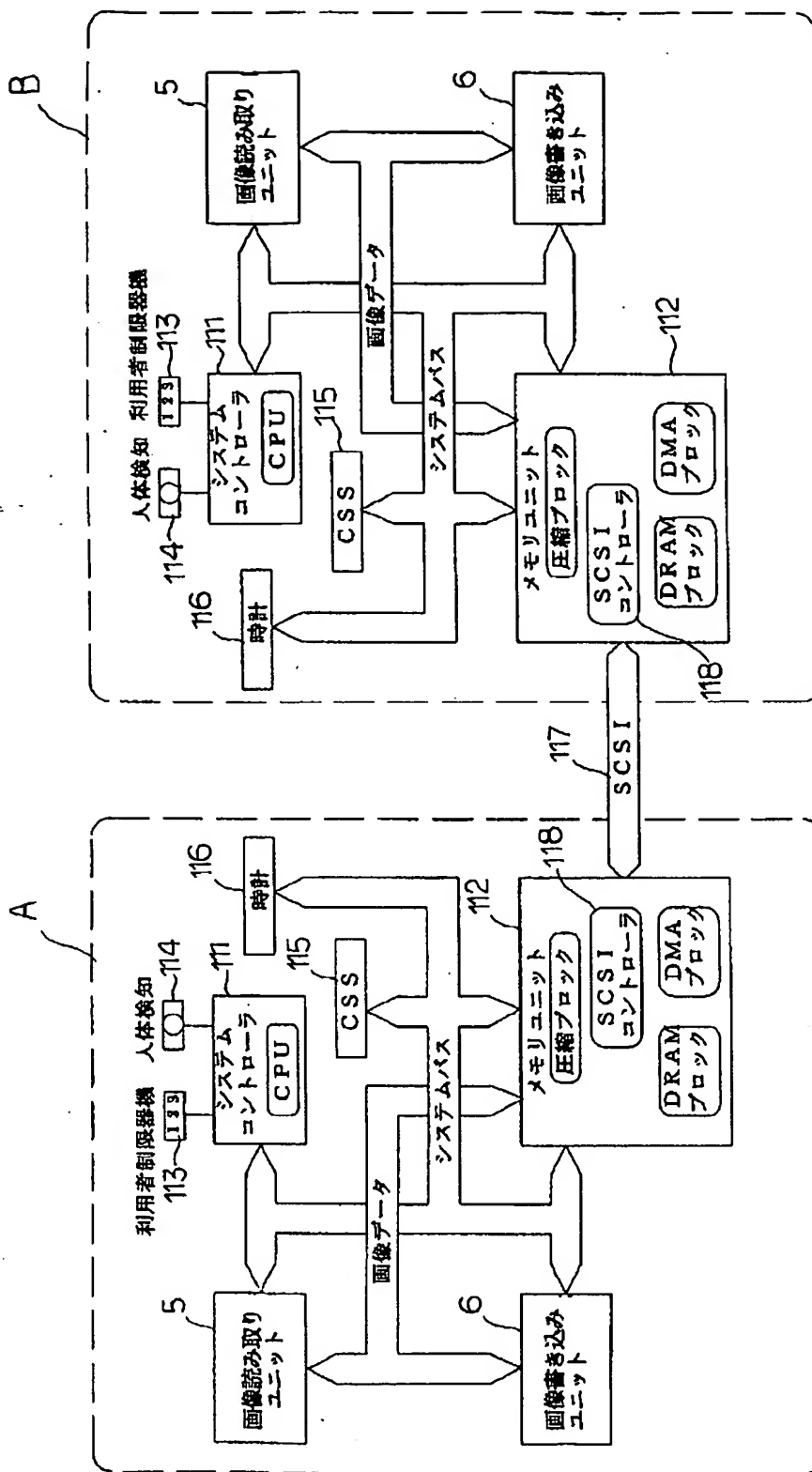
71

コピーできます	セット 9枚
各連結機への出力部数(枚数)を設定してください <input type="button" value="設定終了"/>	
複写機1 2枚	複写機2 2枚
複写機3 2枚	操作機 3枚
複写機5 --枚	複写機6 --枚
複写機7 --枚	複写機8 --枚

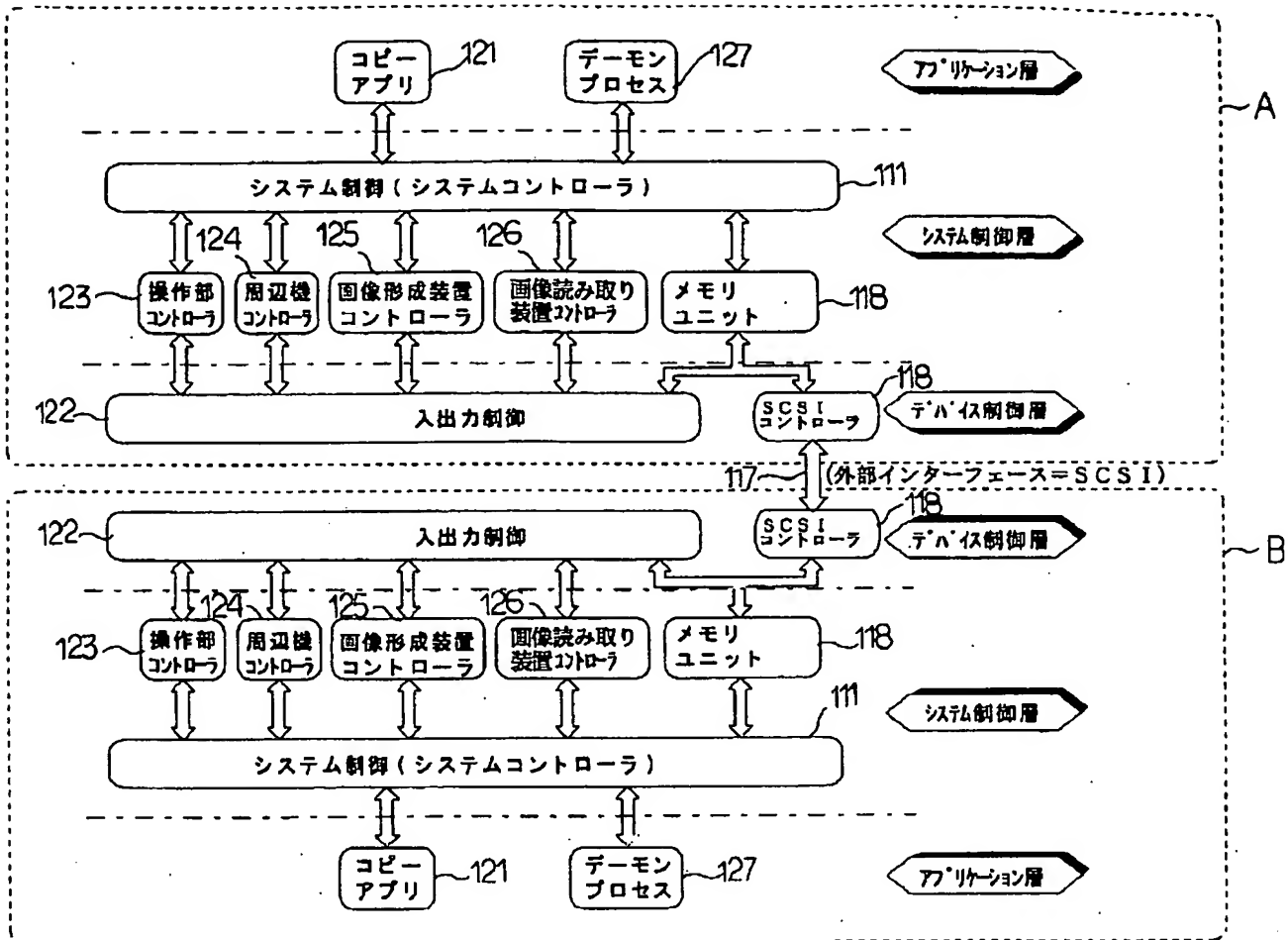
71a

71m

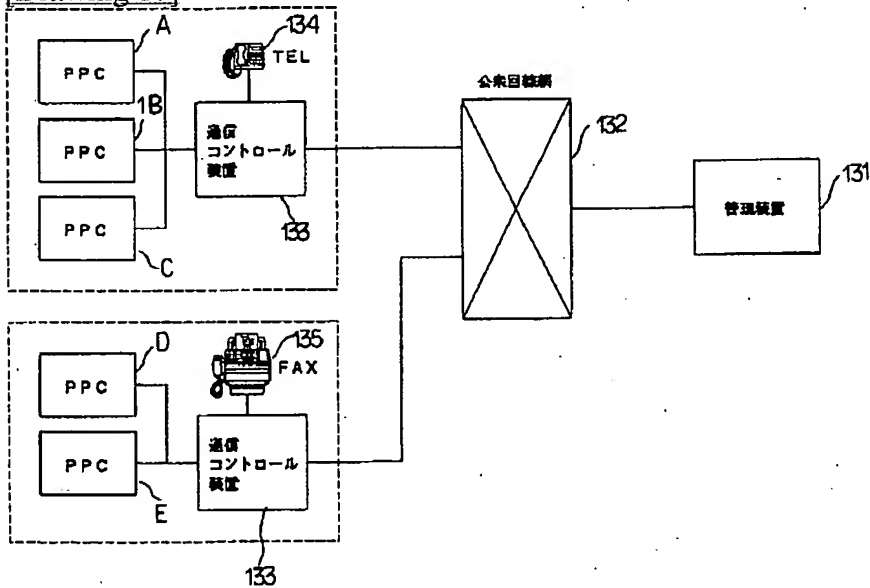
[Drawing 13]



[Drawing 14]

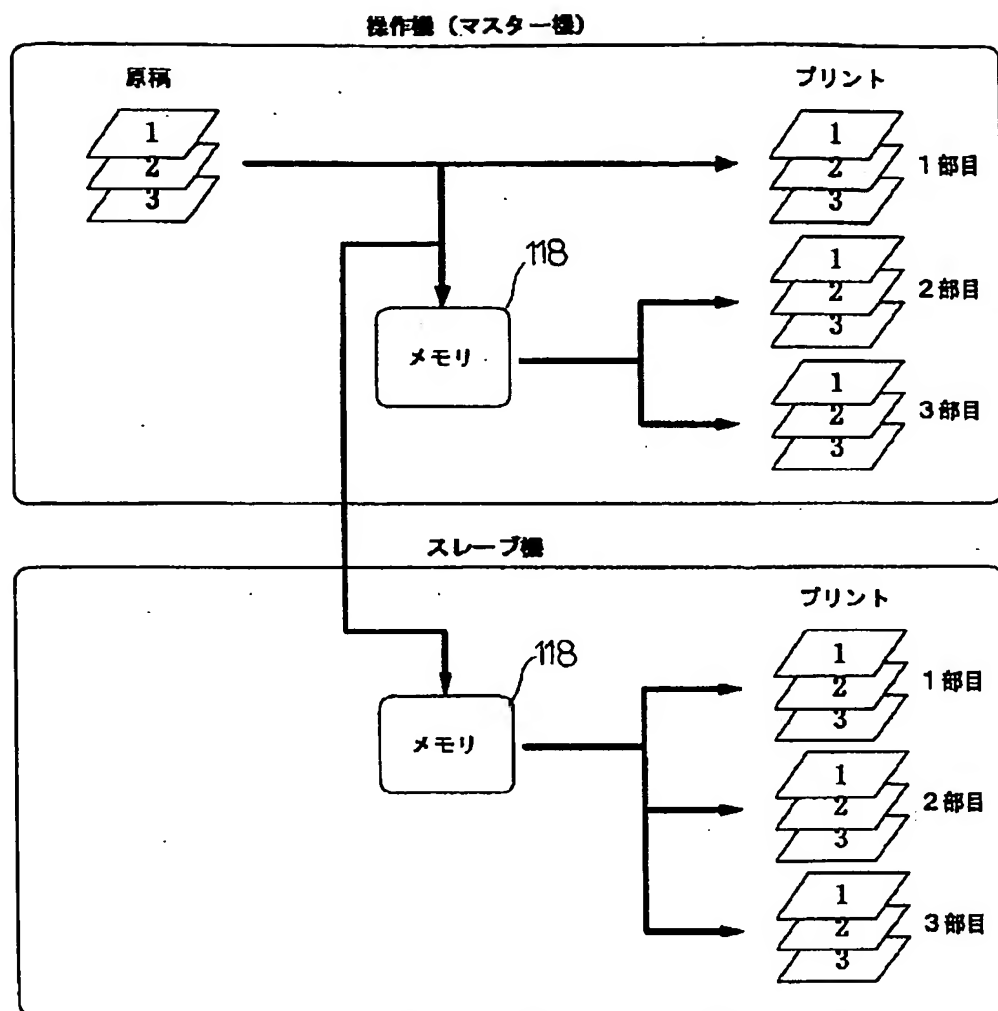


[Drawing 17]

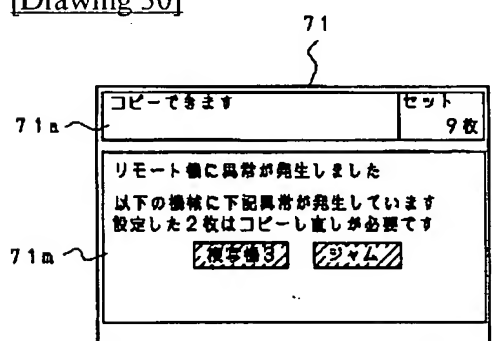


[Drawing 15]

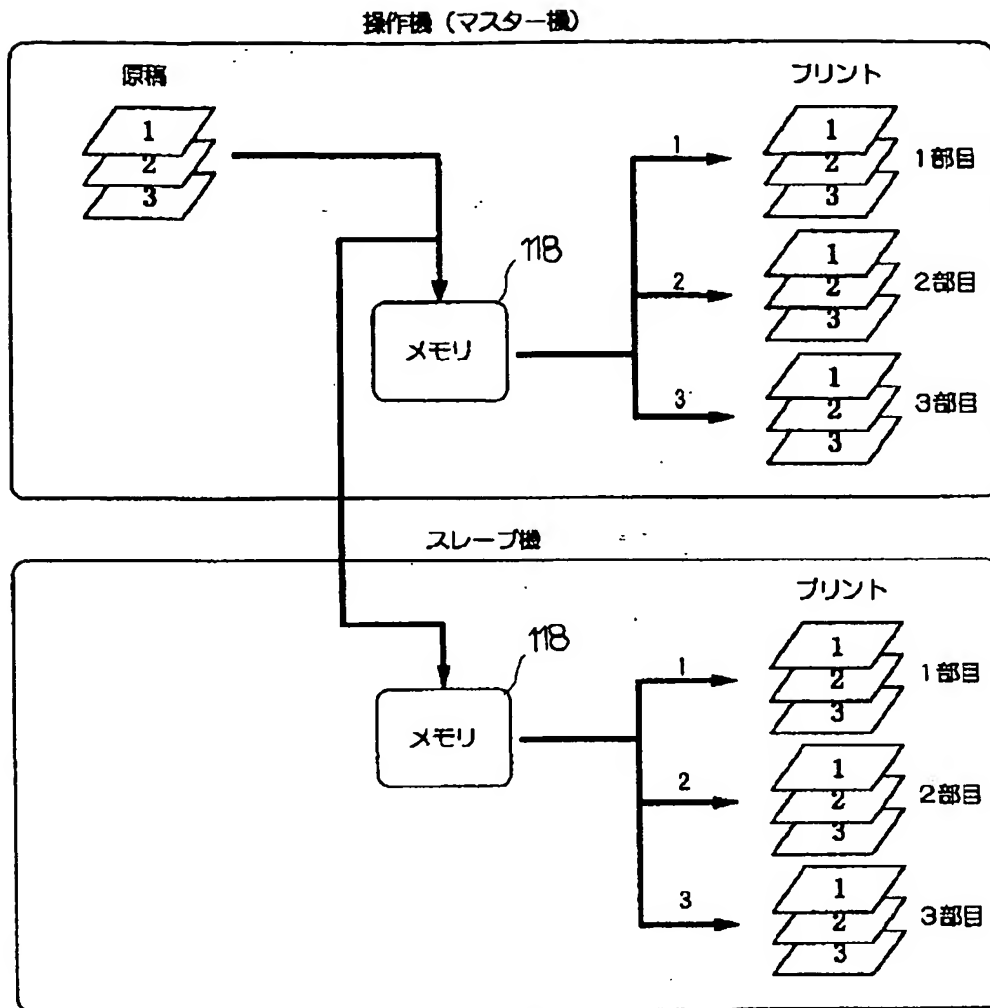




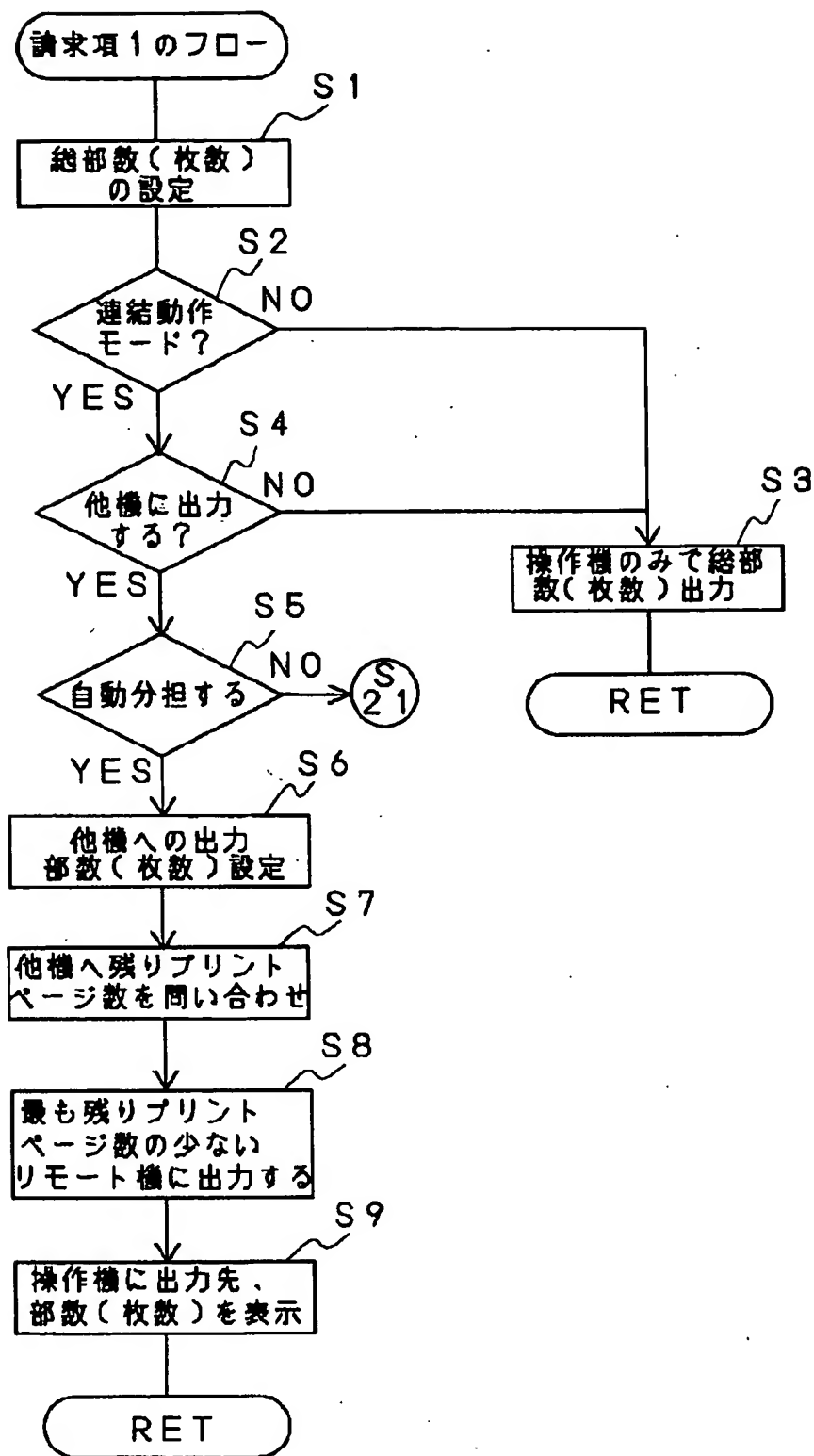
[Drawing 30]



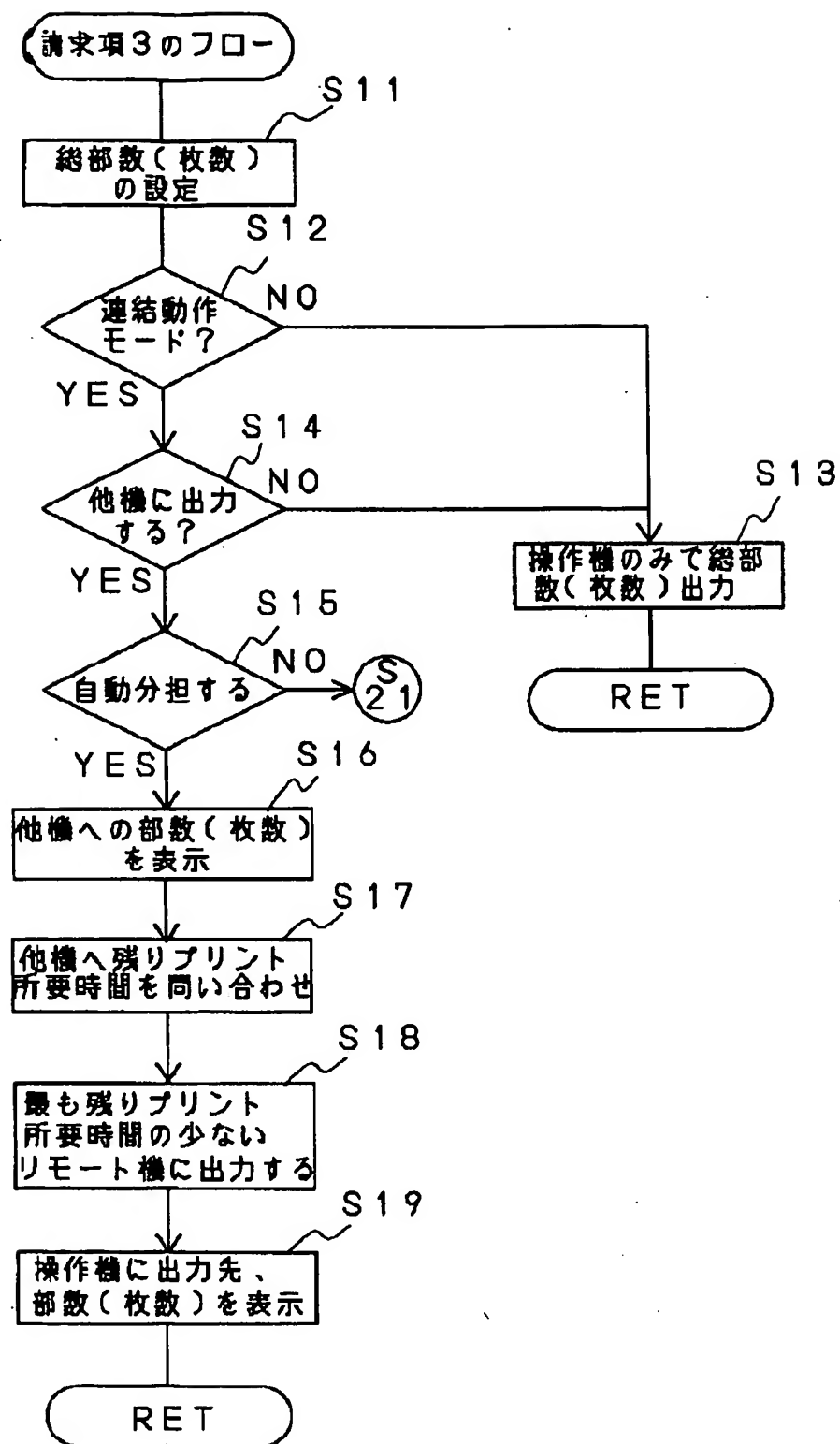
[Drawing 16]



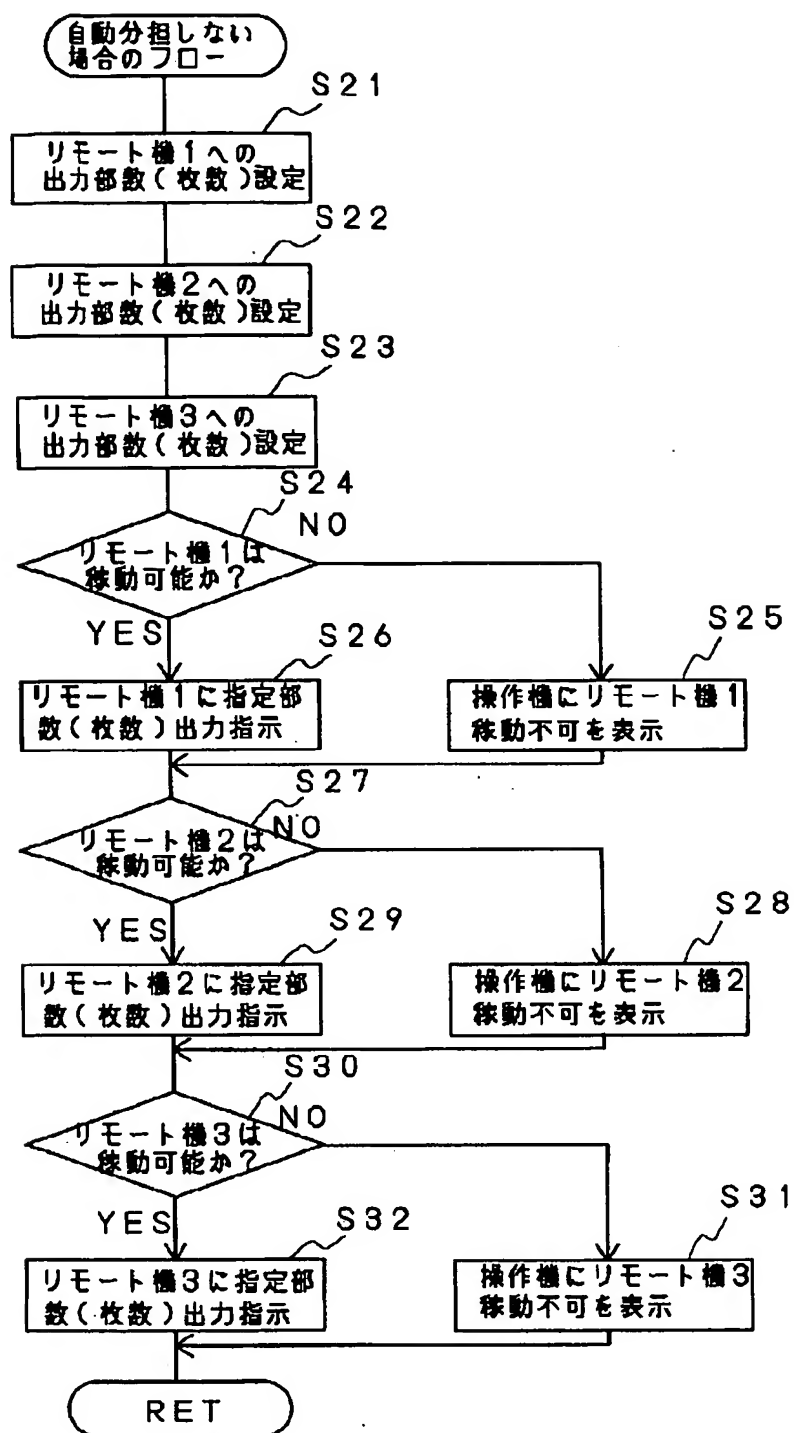
[Drawing 18]



[Drawing 19]



[Drawing 20]



[Translation done.]